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Introduction to HIT Value Position Framework

May 11, 2007

Arthur Davidson, MD, MSPH

1st Region VIII Roundtable Meeting

Radisson Hotel
215 West South Temple,
Salt Lake City, Utah

A Presentation of the
Colorado Health Institute
1576 Sherman Street,
Suite 300
Denver, Colorado
80203-1713

and the **Colorado Health Information Exchange**, an AHRQ-funded State and Regional Demonstration Project

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Citizen for a Day

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Objective

- Set the context and define the need or problem
- Discuss value as a health care market concept
- Emphasize value as essential when defining health information exchange purpose
- Suggest Region VIII opportunities for value and interoperability collaboration

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Context: Needs/Problems

- Transparency of quality and cost data
  - Little consumer informed choice
- Avoidance of medical errors
  - Up to 98,000 avoidable annual deaths due to medical errors
- Improvement of resource utilization
  - Up to $300B spent annually on treatments with no health yield
- Acceleration of knowledge diffusion
  - 17 years for evidence to be integrated into practice
- Reduction of variability in healthcare delivery and access
  - Access to specialty care highly dependent on geography
- Empowerment of the consumer
  - Consumers have a limited role in their health care management
- Promotion of public health and preparedness
  - Surveillance is fragmented, important to homeland security
- Strengthening of data privacy and protection
  - HIPAA has variable interpretation and implementation

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Crossing the Quality Chasm

- **<u>Recommendation 9</u>: Congress, the executive branch, leaders of health care organizations, public and private purchasers, and health informatics associations and vendors should make a renewed national commitment to building an information infrastructure to support health care delivery, consumer health, quality measurement and improvement, public accountability, clinical and health services research, and clinical education. This commitment should lead to the elimination of most handwritten clinical data by the end of the decade.**

IOM, Crossing the Quality Chasm, 2003

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Aims for the 21st-Century Health Care System

- ***Safe*** — avoiding injuries to patients from the care that is intended to help them.
- ***Effective*** — providing services based on scientific knowledge to all who could benefit and refraining from providing services to those not likely to benefit (avoiding underuse and overuse, respectively).
- ***Patient-centered*** — providing care that is respectful of and responsive to individual patient preferences, needs, and values and ensuring that patient values guide all clinical decisions.
- ***Timely*** — reducing waits and sometimes harmful delays for both those who receive and those who give care.
- ***Efficient*** — avoiding waste, including waste of equipment, supplies, ideas, and energy.
- ***Equitable*** — providing care that does not vary in quality because of personal characteristics such as gender, ethnicity, geographic location, and socioeconomic status.

IOM, Crossing the Quality Chasm, 2003

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Redesign Health Care Processes (in accordance with following rules)

1. Care based on continuous healing relationships.
2. Customization based on patient needs and values.
3. The patient as the source of control.
4. Shared knowledge and the free flow of information.
5. Evidence-based decision making.
6. Safety as a system property.
7. The need for transparency.
8. Anticipation of needs.
9. Continuous decrease in waste.
10. Cooperation among clinicians.

IOM, Crossing the Quality Chasm, Recommendation 4, 2003

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What Patients Should Expect from Their Health Care

IOM, Crossing the Quality Chasm, 2003

1. **Beyond patient visits:** Have the care you need when and whenever you need it. Find help in many forms, not just in face-to-face visits e.g., Internet, telephone, many sources, by many routes, in the form you want it).
2. **Individualization:** Be known and respected as an individual. Your choices and preferences will be sought and honored. Usual system will meet most of your needs. When your needs are special, the care adapts to meet you on your own terms.
3. **Control:** Care system only takes control if/when you freely give permission.
4. **Information:** You know what you wish to know, when you wish to know it. Your medical record is yours to keep, to read, and to understand. Rule: “Nothing about you without you.”
5. **Science:** Care based on best available scientific knowledge. System promises only helpful care, and avoids unhelpful care with excellence as standard. No illogical variance from doctor to doctor or place to place.

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What Patients Should Expect from Their Health Care

IOM, Crossing the Quality Chasm, 2003

6. **Safety:** Errors in care will not harm you. You will be safe in the care system.
7. **Transparency:** Care will be confidential, but the care system will not keep secrets from you. Know whatever you wish to know about the care that affects you and your loved ones.
8. **Anticipation:** Care anticipates your needs and helps you find the help you need. Experience proactive help, not just reactions, to help you restore and maintain your health.
9. **Value:** Care wastes neither time nor money. Benefit from constant innovations to increase the value of care to you.
10. **Cooperation:** Those who provide care will cooperate and coordinate their work fully with each other and with you. The walls between professions and institutions will crumble, so that your experiences will become seamless.

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National HIT Agenda

- Widespread adoption of interoperable Electronic Health Records within 10 years
- Medical information follows the consumer
- Clinicians have complete, computerized patient information
- Quality initiatives measure performance and drive quality-based competition
- Public health and bioterrorism surveillance are seamlessly integrated into care

Office of the National Coordinator (ONC) for Health IT
Established in response to Executive Order 13335, April 27, 2004

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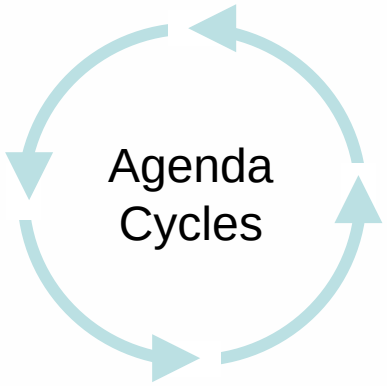
The National HIT Agenda

American Health Information Community
- Priorities
- Business needs and issues
- Breakthroughs / Use Cases

Certification
- Criteria development
- Testing

Standards
- HITSP Interoperability Specifications
- Inter-organizational exchange



Business Deployment
- Sustainable business models
- Software
- State / regional partnerships
- Evaluation

Architecture
- Architecture specifications for network of networks
- NHIN network service providers

Policies, Security and Privacy
- HIPAA, state laws and regulations
- HISPC, CPWG, NCVHS, State Alliance

J. Loonsk, Office of the National Coordinator (ONC) for Health IT

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Value

- the amount of a commodity, service, or medium of exchange that is the equivalent of something else : *a fair return in goods, services, or money*
  - the method of merchandising is to give the buyer good value at the right price

    Wall Street Journal

Merriam-Webster's Unabridged Dictionary

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Concept of Value

- Value is central to most purchasing decisions in non-healthcare areas
  - *e.g., purchasing a computer, one looks at more than just cost. A consumer's value equation for a computer purchase decision includes such benefits as processor speed, size of hard drive, speed of the CD ROM drive, service, reliability and other factors.*

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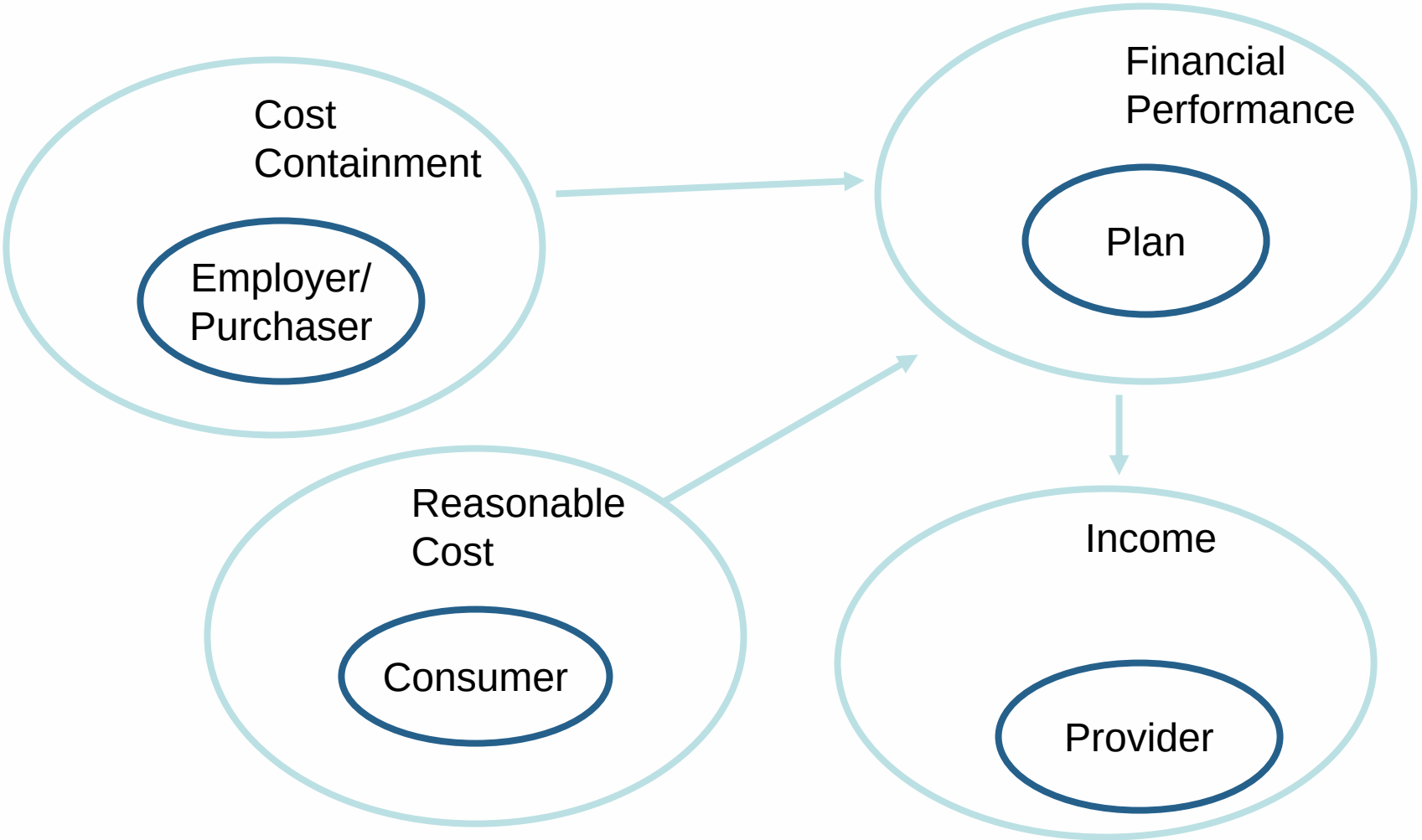
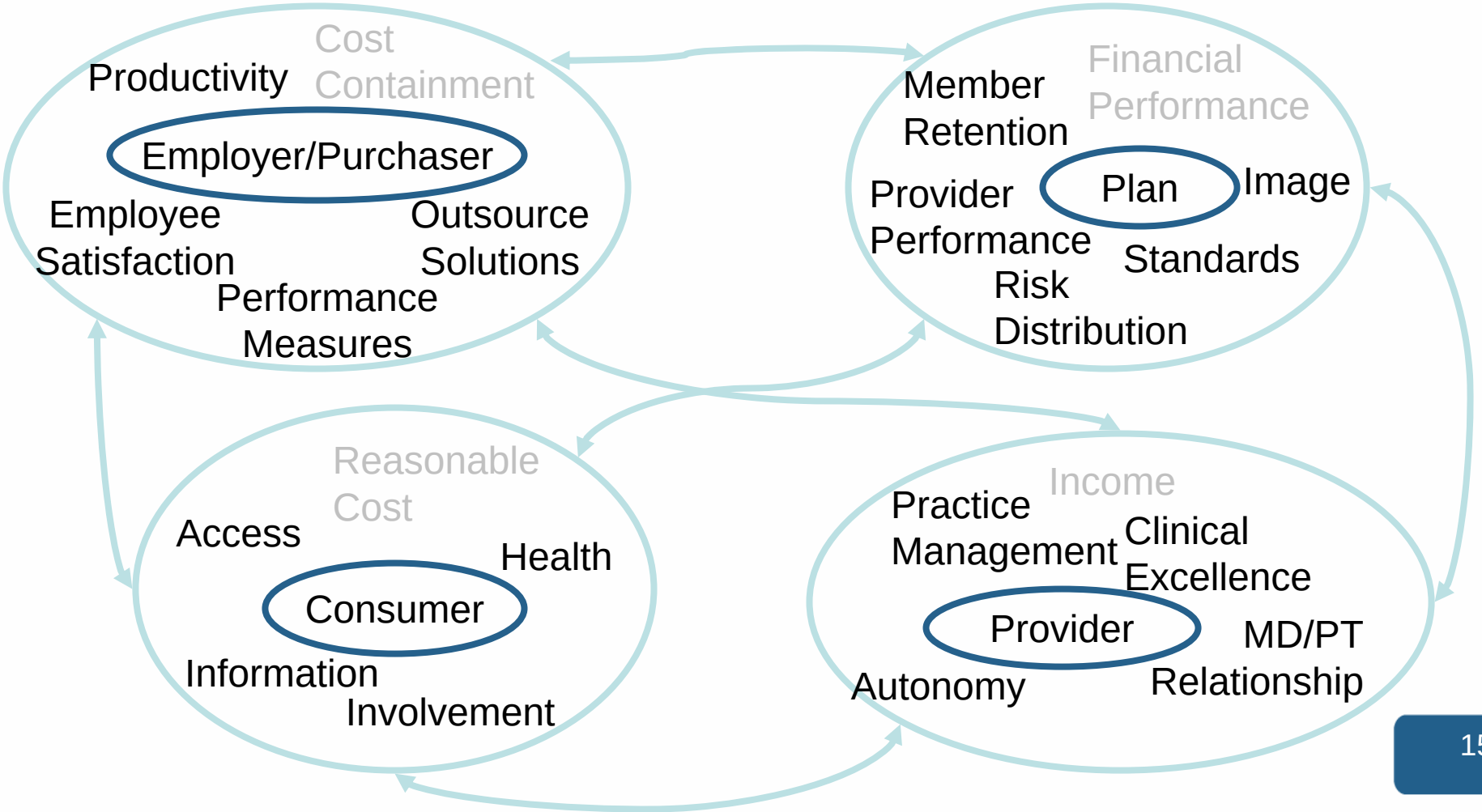
Cost-based Market



Young DW, et al. J Healthcare Management 2001; 46:112-133

Value-based Market



Young DW, et al. J Healthcare Management 2001; 46:112-133

Shift from Cost-based to Value-based System

	COST- BASED	VALUE-BASED
Employer to Employee	Company helps you finance healthcare coverage	Company provides access to quality providers and programs to maximize health status at reasonable cost
Health Plan to Employer	Plan helps you reduce cost of claims and cost of administering plan	Plan helps satisfy employees, improve productivity through access to quality care and improve health status
Health Plan to Provider	Plan provides patients in exchange for discount	Plan works with providers to streamline administrative processes and supply data to allow improvement in care delivered to patients
Provider to Health Plan	Providers agree to accept deeper discounts	Providers assist/participate in development of programs to improve health status for consumers and improve employee productivity and demonstrate benefit

Young DW, et al. J Healthcare Management 2001; 46:112-133

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Example of Stakeholder Value Equations

Young DW, et al. J Healthcare Management 2001; 46:112-133

Value for:	Final Benefit	Intermediate Benefit	Costs
Employer	↑ produc'ity	↑health status; ↑ employee benefit satisfaction; ↑ retention	•administrative •claims/premiums
Consumer /Patient	↑hlth status, ↓ financial risk	access to quality care and service, comprehensive coverage	•premiums •co-payments •deductible
Provider	↑ profess. satisfaction, ↑ revenue	clinical autonomy; fair compensation for risk/service; satisfying clinical/professional relationships; provider-patient relationship	•care delivery •administrative
Health Plan	↑ revenue	comprehensive network; manageable risk; ↑ population health status; reputation	•administrative •claims

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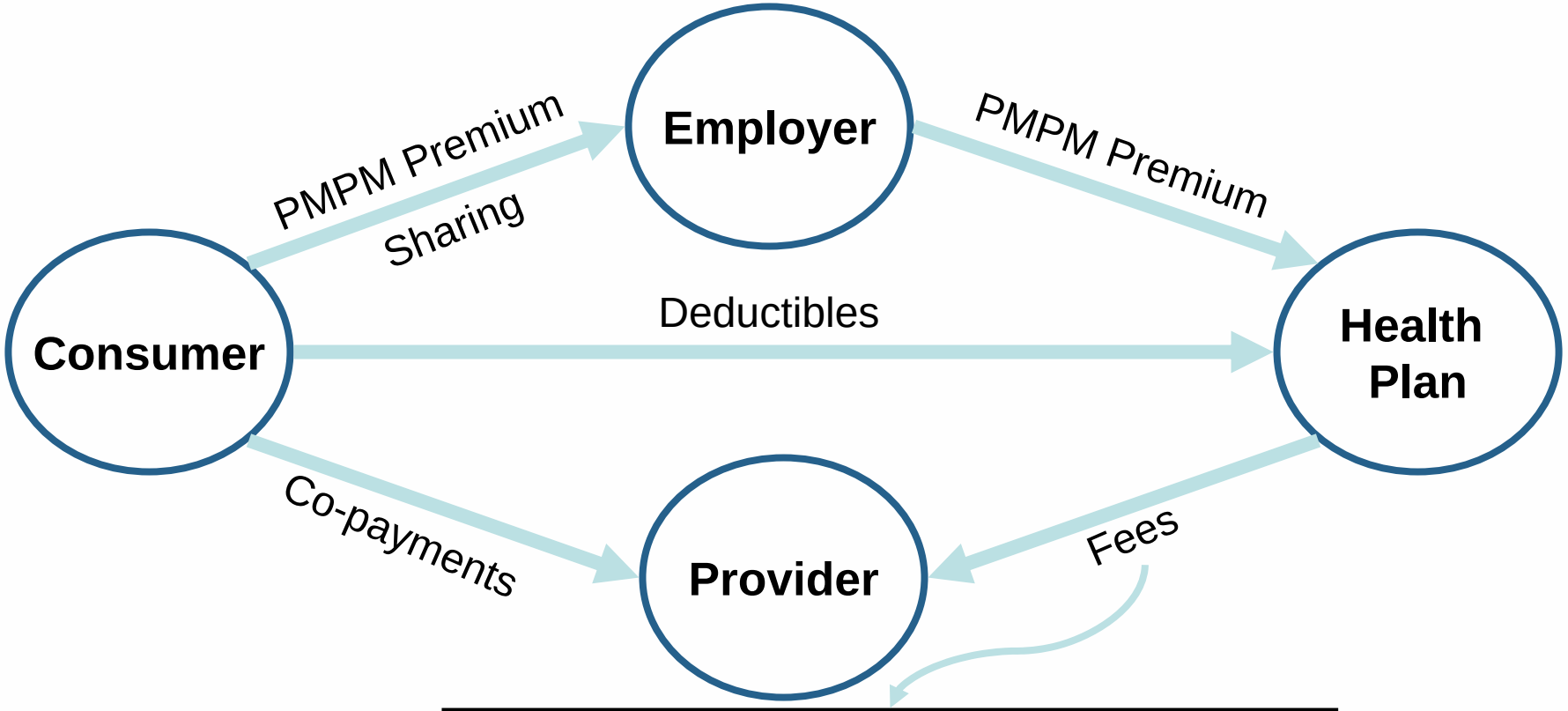
Multiple Markets Multiple Prices

Young DW, et al. J Healthcare Management 2001; 46:112-133



- Hospitals (per diem, DRG)
- PCPs (FFS, discounted FFS, sub capitation)
- Specialists (FFS, discounted FFS , sub-capitation)
- Other providers

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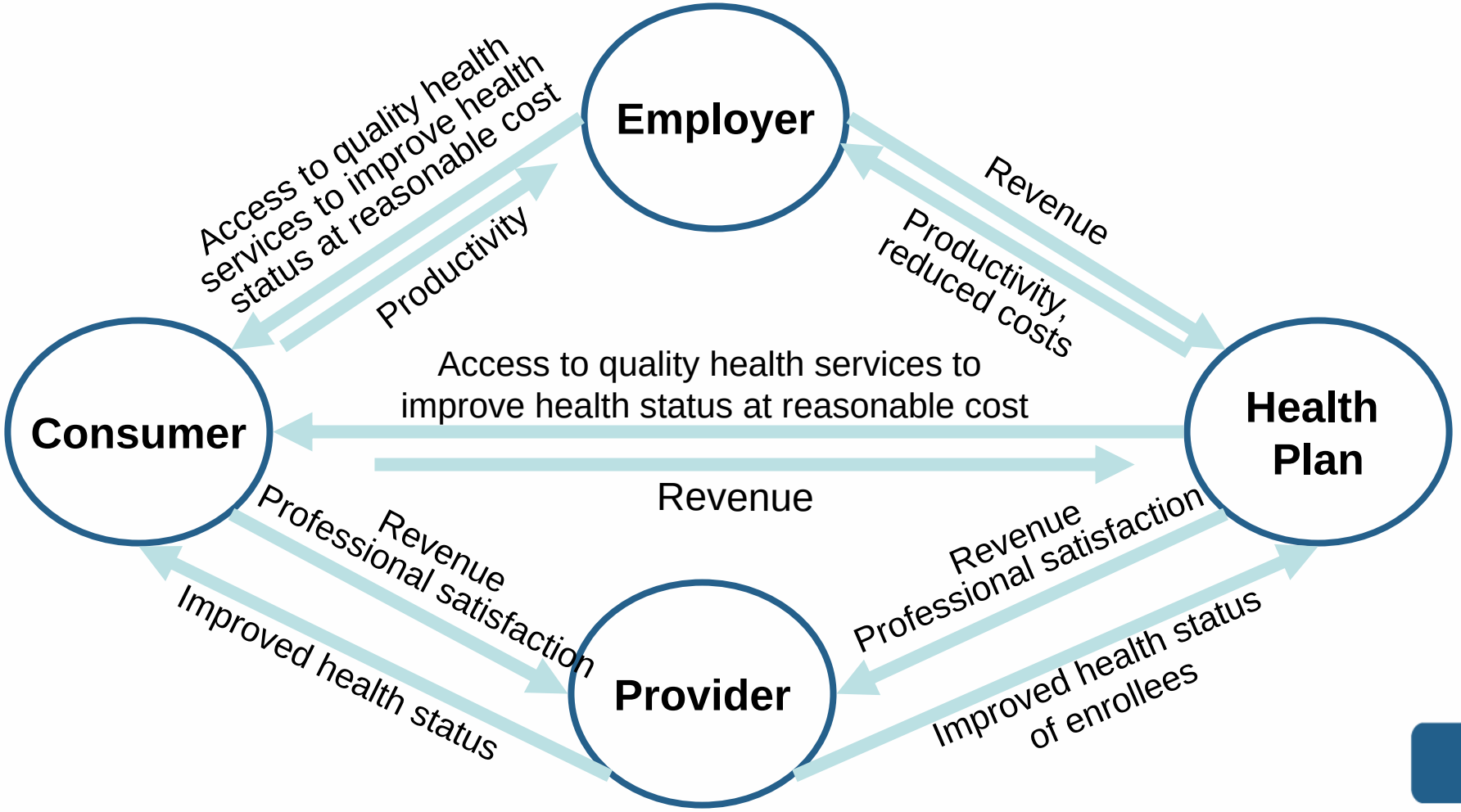
Multiple Markets Multiple Value Equations

Young DW, et al. J Healthcare Management 2001; 46:112-133



Framework for a Regional Health Care System

Payers	Providers	Plans	Patients
Collaboration among stakeholders			
Shared data and Performance Measurement			
Engaging Consumers • Public disclosure • Consumer education	**Improving Health Care Delivery** • Information technology tools • Quality improvement strategies • Consensus guidelines' • Care management • Provider networks		**Aligning Benefits/ Financing** • Incentives for cost-effective care • Performance measures and rewards

Transformed Healthcare Delivery

MacColl Institute at Group Health

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Simple Rules for the 21st-Century Health Care System

Current Approach	New Rule
• Care is based primarily on visits.	• Care is based on continuous healing relationships.
• Professional autonomy drives variability	• Care is customized according to patient needs and values.
• Professionals control care.	• The patient is the source of control.
• Information is a record.	• Knowledge is shared and information flows freely.
• Decision making is based on training experience.	• Decision making is evidence-based.
• Do no harm is an individual responsibility.	• Safety is a system property.
• Secrecy is necessary.	• Transparency is necessary.
• The system reacts to needs.	• Needs are anticipated.
• Cost reduction is sought.	• Waste is continuously decreased.
• Preference is given to professional roles over the system.	• Cooperation among clinicians is a priority.

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Interoperability

- **In healthcare, *interoperability* is the ability of different information technology systems and software applications to communicate, to exchange data accurately, effectively, and consistently, and to use the information that has been exchanged.**

Adapted from the *IEEE definition of interoperability, and legal definitions used by the FCC* (47 CFR 51.3), in statutes regarding copyright protection (17 USC 1201), and e-government services (44 USC 3601)

Building interoperability: key components

- **Structural** (physical nature)
  - (>1,000,000) ATM card/machines
    - same card/reader size, same place for magnetic stripe
- **Semantic** (meaning)
  - ATM message: works anywhere in the world (160 countries)
    - Dollars <-> Euros
- **Pragmatic** (usage)
  - Banking system is aware of the methods and procedures that the ATM is employing
    - Bank statement deducts dollars from account

Building interoperability: key components

- **Structural:** (physical nature)
  - need to define a standard envelope / message
  - HL7 (various flavors need alignment)
  - segments need absolute definition
- **Semantic** (meaning)
  - need a common health concept language
  - proprietary / idiosyncratic names need mapping
  - value is capacity to reuse, reorganize based on common meaning / concept

    e.g., HgA1C <-> HbA1C = LOINC 4548-4
- **Pragmatic** (usage)
  - organize results for aggregation / visualization
  - use results for decision support (e.g., reminders)

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Interoperability

- **Level 1**: Non-electronic data. Examples include paper, mail, and phone call.
- **Level 2**: Machine transportable data. Examples include fax, email, and un-indexed documents.
- **Level 3**: Machine organizable data (structured messages, unstructured content). Examples include indexed (labeled) documents, images, and objects.
- **Level 4**: Machine interpretable data (structured messages, standardized content). Examples include the automated transfer from an external lab of coded results into a provider's EHR. Data can be transmitted (or accessed without transmission) by HIT systems without need for further semantic interpretation or translation.

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Interoperability Value = Benefit - Cost

Level	Data Description	Examples	Post implementation 10-year value	Post implementation Annual value
1	Non-electronic (paper-based)	No PC/information technology	--	--
2	Machine transportable	Fax/Email	$141B	$22B
3	Machine organizable	Structured messages/ non-standard content	$-34B	$24B
4	Machine interpretable	Structured messages/ standardized content	$337B	$78B

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Standards

- supply the framework on which interoperability develops
- must in every case be open, in the public domain and non-proprietary. (e.g., IEEE, x12, ASTM, HL-7, LOINC and SNOMED).
- specify much of the detail necessary to ensure interoperability
- implementation guidelines provide even more critical details on how organizations use the standards.

To achieve interoperability, organizations involved in data exchange projects need to work together to assure that such implementation details are addressed consistently among the participants.

CORHIO Business Lines of Service

- **Point of care aggregation (for patient and/or provider)**
  - Combine clinical information from various sources
    - Diagnoses, problems lists, allergies, laboratory, radiology, procedures, EKG, ….
    - Immunization history (Colorado Immunization Information System)
    - Individualized medication lists (Pharmacy Benefits Managers/Retailers)
  - Decision support for clinical guidelines
- **Clinical messaging (from provider to provider)**
  - Laboratory test orders/results exchange (to/from CDPHE, LabCorp, Quest)
  - e-Prescribing
  - Case reporting, electronic laboratory reporting
  - Ancillary/referral service results (e.g., radiology, consultant reports)
- **Administrative (for provider and payer)**
  - Claims submission
  - Eligibility, credentialing
- **Population/public health aggregation (for all)**
  - Analysis of quality, disparities, morbidity monitoring, pay for performance
  - Registry development and support
  - Bio-surveillance
  - Community health assessments

CORHIO Market Analysis 2007: Point of care

	Physicians	Hospitals	Health Plans	HIE Nodes	Community Health Centers
POINT OF CARE: High conceptual value to integrating administrative and clinical data and consensus that Emergency Department data is a priority					
Aggregated data	++	+	0	0	+ +
Searchable data	+	+	+	+	+
Clinical guidelines	0	-	-	-	---
Decision Support	0	-	0		---

CORHIO Market Analysis 2007: Clinical messaging

	Physicians	Hospitals	Health Plans	HIE Nodes	Community Health Centers
CLINICAL MESSAGING: Strong appeal but focused on immediate medical trade area					
e-Rx	-	- -	+	-	+ +
Medication Reconciliation	+ +	+ +	0		+ +
Lab/Ancillary Order and Results Posting	+	- -	0	+	0
Public Health Reporting	0	+ +	0	+	+ +

CORHIO Market Analysis 2007: Administrative services

	Physicians	Hospitals	Health Plans	HIE Nodes	Community Health Centers
ADMINISTRATIVE: Commoditized, would be difficult to compete					
Claims management	---	---	---	---	0
Eligibility	-	---	-	0	--
Credentialing	---	--	---	---	0

CORHIO Market Analysis 2007: Population health

	Physicians	Hospitals	Health Plans	HIE Nodes	Community Health Centers
POPULATION HEALTH: Support for standardized metrics but competitive barriers to sharing data					
Pay for performance	0	+	0	-	--
Registry development	+	+	0	-	+++
Registry support			+		++
Biosurveillance	+	0	0	0	+
Community health assessment/ data extraction	++	++	+	+	+

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Brailer Bag

- Noun
  - a dip net resembling a small purse seine with which fish are hauled aboard a boat after being gathered in a purse seine or trap; also : such a dip net full of fish "*a brail of salmon*"

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Aren't we in danger of promoting a fragmented system if HIT evolves locally?

- A one-size-fits-all federal policy cannot reconcile all of the state and local requirements and rules and therefore would not work.
- RHIOs fill that space and ensure that national efforts translate down into the culture and priorities at the local level. This may seem complicated, but we need to bear in mind that the problem itself is numbingly complex, and simplistic solutions won't work.
- In an ideal world, we wouldn't have to create intermediate infrastructure like RHIOs, but in an ideal world, HIT would already be in use.

Health Information Technology Is A Vehicle, Not A Destination: A Conversation With David J. Brailer. Health Affairs 2007; 26w236–w241

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Are RHIOs the most promising pathway to interoperability?

- RHIOs are part of a solution, but not the whole solution.
- Every large plan for connecting people—in health care or in others settings—comes down to the ‘last mile’ problem.

Health Information Technology Is A Vehicle, Not A Destination: A Conversation With David J. Brailer. Health Affairs 2007; 26w236–w241

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What changed on your watch?

- Came to recognize the power of HIT to address some of the biggest problems we face.
- Adoption of HIT increased. The CDC reported that 20 percent more hospitals had EHRs last year than in the year before. We moved from a flat-line adoption over the five years before that.
- Set a conceptual foundation that HIT was not about technology, but about good health information that is portable, well-structured, standardized, and secure so that it can be used to improve health care.

Health Information Technology Is A Vehicle, Not A Destination: A Conversation With David J. Brailer. Health Affairs 2007; 26w236–w241

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What didn't change on your watch?

- Building the capacity to make health information shared and portable. We made good progress, but it's still not there. There is a real debate over whether health information is owned by doctors and hospitals or by consumers.
- We advocated for more consumer ownership, but the question remains unsettled.

Health Information Technology Is A Vehicle, Not A Destination: A Conversation With David J. Brailer. Health Affairs 2007; 26w236–w241

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Brailer Bag

- What degree of uniformity, parallelism, or alignment should we expect RHIOs/HIEs to have?
- Is cost savings a necessary condition for demonstrating the HIE value proposition?

Malepati, Sarath; Kushner, Kathryn; Lee, Jason S.
RHIOs and the Value Proposition: Value Is in the Eye of the Beholder.
Journal of AHIMA 78, no.3 (March 2007): 24-29.

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5-year Estimated Cost of NHIN

Interoperability:

- **$53 B capital / $21 B annual operating**

Functionality:

- **$103 B capital / $27 B annual operating**
  - **Results viewing**
  - **CPOE**
  - **EHR**
  - **Claims**
  - **Eligibility**
  - **Patient communications**
  - **e-Prescribing**

Current spending:

- **$24 B capital / $7 B annual operating**

2003 Annual cost:

- **$1.65 T**
- **15% GDP**
- **5% increase/yr**

Kaushal, et al, The Costs of a National Health Information Network *Ann Intern Med.* 2005;143:165-173.

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2006 Population Estimates

- Colorado 4,753,377
- Montana 944,632
- North Dakota 635,867
- South Dakota 781,919
- Wyoming 515,004
- Utah 2,550,063

Region VIII 10,180,862 (3.5%)

NHIN in Region VIII= $5.3 Billion

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Should Medicare directly incentivize interoperable provider EHR adoption?

- "Depends on what you mean by 'directly.' By approving the recent Stark exception that allows donation of interoperable EHR systems by hospitals to doctors, Medicare is incentivizing adoption.
- That's less direct than Medicare using provider reimbursement or a mandated condition of participation.
- The Stark exception allows the private sector to address market flaws that have made it difficult to invest in HIT. It brings the additional benefit of encouraging new levels of collaboration between physicians and hospitals.
- Reductions in siloed health care delivery will itself greatly boost clinical performance.

Health Information Technology Is A Vehicle, Not A Destination: A Conversation With David J. Brailer. Health Affairs 2007; 26w236–w241

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Actionable Items

Adoption

- Promote incentives
- Institute regulatory reforms
- Report adoption gaps
- Identify workforce needs/impacts
- Promote public awareness

Ending the Document Game,
Commission on Systemic Interoperability , 2005

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Actionable Items

Interoperability:

- Product certification
- Data standards
- Standard product identifiers and vocabulary
- Drug records

Ending the Document Game,
Commission on Systemic Interoperability, 2005

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Actionable Items

Connectivity

- Patient authentication standard
- Federal privacy standard
- Nationwide Health Information Network
- Criminal sanctions for privacy violations
- Consumer protection

Ending the Document Game,
Commission on Systemic Interoperability , 2005

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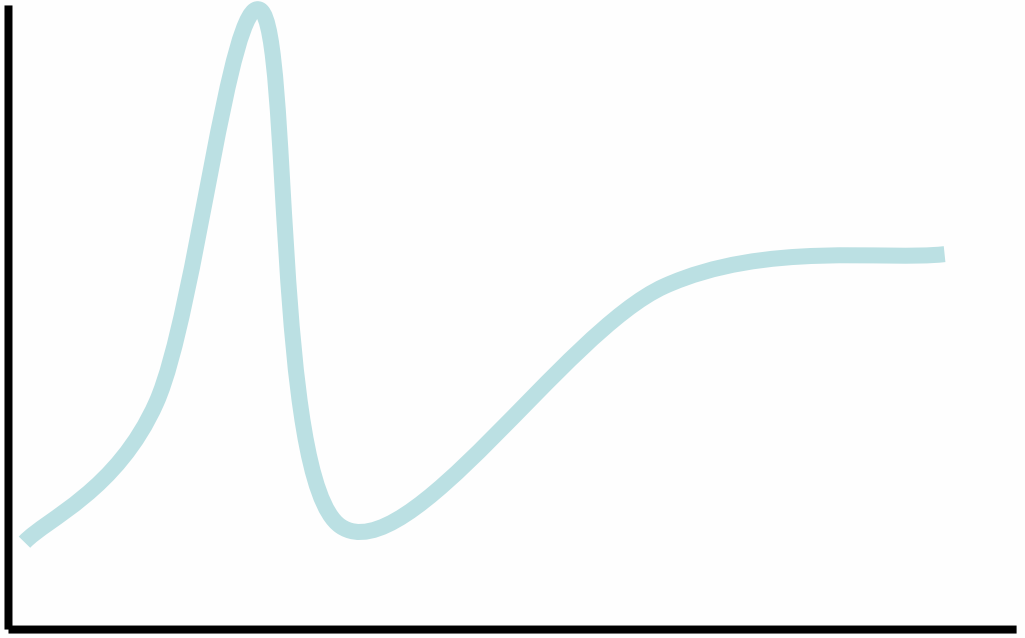
Hype Cycle



- Technology trigger
- Peak of inflated expectations
- Trough of disillusionment
- Slope of enlightenment
- Plateau of productivity.

Gartner Group 1995

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Brailer Bag

- You can’t legislate will.

Malepati, Sarath; Kushner, Kathryn; Lee, Jason S.
RHIOs and the Value Proposition: Value Is in the Eye of the Beholder.
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